

19th.—The s. s. "Critic," in N. $49^{\circ} 48'$, W. $46^{\circ} 10'$, passed a large iceberg.

23d.—The s. s. "Montreal," in N. $52^{\circ} 42'$, W. $52^{\circ} 00'$, passed the first iceberg; several more in sight to the westward; also saw bergs at intervals until through the Strait of Belle Isle. The s. s. "Buenos Ayrean," at 6.20 a. m., Point Amour two miles abeam, till 11.45 p. m., in N. $52^{\circ} 30'$, W. $51^{\circ} 38'$, passed several large icebergs.

24th.—The s. s. "Mathew Bedlington," in N. $48^{\circ} 37'$, W. $49^{\circ} 12'$, at 4 p. m. passed an iceberg.

25th.—The s. s. "Mathew Bedlington" at 7.45 p. m. passed an iceberg near Cape Race, bearing northeast fifteen miles.

28th.—The s. s. "La Bourgogne," in N. $43^{\circ} 21'$, W. $53^{\circ} 27'$, passed an iceberg.

31st.—The s. s. "Durham City," in N. $49^{\circ} 48'$, W. $46^{\circ} 20'$, at 6 p. m. passed two icebergs; estimated height two hundred and fifty feet; length one thousand feet. The s. s. "Jan Breydel," in N. $43^{\circ} 30'$, W. $51^{\circ} 36'$, at 10.30 a. m. passed two icebergs, one of moderate size, the other of enormous dimensions, being about one hundred and fifty feet above sea surface, each bearing about north to south, and two miles apart. Temperature of the air when passing $62^{\circ} 5$, of the water 63° .

SIGNAL SERVICE AGENCIES.

Signal Service agencies have been established in the Maritime Exchange buildings at New York City and Philadelphia, and in the Custom-House, Boston, where the necessary blanks and other information will be furnished to ship-masters.

In pursuance of the arrangements made with the Meteorological Office of London, England, there were cabled to that office from New York during July, 1886, six reports concerning storms and icebergs encountered by vessels in the Atlantic west of the forty-fifth meridian; three messages were sent from Boston.

TEMPERATURE OF THE AIR.

[Expressed in degrees, Fahrenheit.]

The distribution of mean temperature over the United States and Canada for July, 1886, is exhibited on chart ii by the dotted isothermal lines; and in the table of miscellaneous data are given the monthly mean temperatures, with the departures from the normal, for the various stations of the Signal Service. On chart iv the departures from the normal temperature are illustrated by lines connecting stations of normal or equal abnormal values.

The mean temperature for the month is quite abnormal, large excesses occurring in some districts and deficiencies in others. Large excesses occur in Montana, Idaho, Wyoming, and Dakota, the mean temperatures for these territories ranging from 4° to 9° above the normal. All stations in the Rocky Mountain region, the Missouri Valley, Pacific coast, and nearly all stations in that portion of the country lying west of the Mississippi River, are above the normal, southern Texas and southern California being exceptions. The mean temperature of the country east of the Mississippi River is below the normal, the largest deficiencies occurring in the southern districts, where the mean temperature for the month is about 3° colder than the average July.

The following are some of the most marked departures from the normal temperature at Signal Service stations:

temperature, are given in the table of miscellaneous meteorological data.

The following are some of the greatest and least monthly ranges at Signal Service stations:

	Greatest.	Least.	
Poplar River, Montana	63.8	Cape Hatteras, North Carolina	17.8
Bonneville, Idaho	62.6	Cedar Keys, Florida	19.6
Fort Shaw, Montana	62.4	Smithville, North Carolina	21.6
Fort Benton, Montana	61.7	Pike's Peak, Colorado	22.1
Fort Assiniboine, Montana	61.5	New Orleans, Louisiana	22.1
Winnemucca, Nevada	60.8	Pensacola, Florida	22.3
Helena, Montana	60.0	Indianola, Texas	22.5
Fort Custer, Montana	58.6	Brownsville, Texas	22.8

Table of comparative maximum and minimum temperatures for July.

State or Territory.	Station.	For 1886.		Since establishment of station.			
		Max.	Min.	Max.	Year.	Min.	Year.
Alabama	Mobile	92.7	64.8	101.0	1883	63.8	1882
Do	Montgomery	95.0	65.3	106.9	1881	66.8	1882
Arizona	Prescott	96.1	50.9	103.0	1878	41.0	1879
Do	Fort Apache	100.2	54.3	102.5	1881	42.0	1879
Arkansas	Fort Smith	102.6	62.2	104.5	1884	61.0	1882
Do	Little Rock	93.8	66.0	101.3	1884	61.0	1882
California	San Francisco	77.8	49.7	83.0	1881, 1884	49.0	1874, 1881
Do	San Diego	81.2	57.0	86.0	1877	53.7	1884
Colorado	Denver	96.3	55.5	102.3	1874	42.0	1873
Do	Pike's Peak	57.1	35.0	64.0	1879	18.0	1876
Connecticut	New Haven	90.3	51.2	95.0	1876	50.3	1885
Do	New London	88.0	54.3	93.0	1876, 1878	51.0	1879
Dakota	Fort Buford	105.9	49.7	104.0	1881	37.5	1884
Do	Yankton	102.7	56.2	103.0	1883	44.0	1877
Delaware	Del. Breakwater			91.0	1880	59.0	1882
District of Columbia	Washington City	91.2	66.2	102.0	1879	54.1	1885
Florida	Jacksonville	93.7	70.2	104.0	1879	68.0	1877, 1879
Do	Key West	99.5	72.0	97.0	1880	72.7	1883
Georgia	Atlanta	92.8	57.8	97.5	1881	57.8	1882
Do	Savannah	92.0	69.0	105.0	1879	65.4	1879
Idaho	Boise City	105.9	44.3	100.0	1877	41.0	1880
Do	Lewiston			104.8	1882	48.0	'80, '81, '82
Illinois	Cairo	92.9	62.0	99.0	1874, 1881	60.0	1883
Do	Chicago	94.5	55.1	99.0	1874	50.0	1873
Indiana	Indianapolis	94.8	50.9	101.0	1881	47.5	1885
Indian Territory	Fort Sill	103.0	67.0	105.0	1881	56.0	1880
Iowa	Dubuque	100.4	53.1	101.0	1874	50.4	1882
Do	Keokuk	97.5	58.0	100.0	1874	50.0	'73, '80, '83
Kansas	Dodge City	100.2	62.0	105.0	1876	50.0	1877
Do	Leavenworth	100.2	59.5	104.0	1874	53.5	1882
Kentucky	Louisville	96.7	58.3	102.0	1874	54.0	1885
Louisiana	New Orleans	92.9	70.8	96.0	1877	69.8	1882
Do	Shreveport	100.4	59.9	107.0	1875	64.0	'77, '80, '82
Maine	Eastport	87.4	48.1	86.0	1873, 1880	45.0	1882, 1884
Do	Portland	94.2	48.5	97.0	1876	51.0	1876, 1882
Maryland	Baltimore	92.2	58.9	99.0	'76, '79, '80	56.0	1885
Massachusetts	Boston	95.4	54.5	101.0	1880	46.0	1874
Michigan	Detroit	92.0	53.3	100.0	1878	50.0	1873, 1883
Do	Alpena	98.2	43.0	97.0	1876	44.1	1884
Minnesota	Duluth	94.0	46.2	99.0	1883	46.0	1875
Do	Saint Paul	94.0	54.7	100.0	1883	46.0	1873
Mississippi	Vicksburg	96.1	65.8	100.0	1878, 1881	62.0	1881
Missouri	Saint Louis	96.1	62.7	104.0	1881	57.0	1876
Montana	Fort Benton	110.8	49.1	107.0	1881	37.0	1874
Do	Helena	103.1	43.1	98.0	1870	38.0	1880
Nebraska	North Platte	102.4	56.3	107.0	1877	45.0	1877, 1882
Do	Omaha	100.0	59.2	1.5.0	1874	51.0	1873
Nevada	Winnemucca	100.2	39.4	104.0	1877	37.0	1877, 1878
New Hampshire	Mount Washington	47.0	28.5	72.0	1881	27.0	1883
New Jersey	Atlantic City	86.1	58.3	99.0	1880	53.0	1880
Do	Sandy Hook	93.0	61.4	100.0	1876	50.0	1880
New Mexico	Santa Fe	93.0	55.0	95.5	1878	46.0	1872, 1880
New York	Buffalo	86.7	51.3	90.0	1878	47.5	1876
Do	New York City	90.5	60.0	99.0	1876	56.2	1885
North Carolina	Charlotte	93.7	59.9	101.0	1879	50.1	1885
Ohio	Wilmington	94.5	66.0	103.0	1879	62.0	1881
Do	Cincinnati	94.7	60.0	103.5	1881	53.0	1885
Oregon	Cleveland	92.0	51.1	96.0	1878	49.6	1883
Do	Portland	93.9	50.4	99.0	1885	40.0	1875, 1880
Pennsylvania	Roseburg	100.0	44.5	106.8	1885	40.0	1879
Do	Pittsburgh	95.8	53.5	102.7	1881	50.0	1885
Philadelphia	93.8	59.3	100.0	1876	56.0	1883	
Rhode Island	Block Island	80.3	57.7	87.8	1885	55.0	1883
South Carolina	Charleston	92.1	64.7	104.0	1879	66.0	1885
Tennessee	Knoxville	94.4	57.2	100.0	1879	52.2	1885
Do	Nashville	96.0	56.7	101.2	1881	56.3	1882
Texas	Fort Davis	101.7	55.3	110.0	1881	53.0	1881
Do	Galveston	92.5	67.9	97.0	1875	69.0	1880
Utah	Salt Lake City	98.6	51.4	99.7	1885	45.0	1880
Virginia	Lynchburg	94.6	60.6	101.8	1881	54.4	1885
Do	Norfolk	92.2	64.0	102.5	1876	59.4	1885
Washington Ter.	Olympia	86.8	45.1	97.0	1885	40.0	1882
Wisconsin	La Crosse	95.5	56.7	101.0	1874	54.0	1880, 1883
Do	Milwaukee	97.5	49.7	95.0	'71, '74, '78	50.0	1875, 1876, 1880, 1883
Wyoming	Cheyenne	96.2	46.4	100.5	1881	37.6	1882

DEVIATIONS FROM NORMAL TEMPERATURES.

In the table below are given, for certain stations, as reported by voluntary observers, the normal temperatures for

RANGES OF TEMPERATURE.

The monthly, and the greatest and least daily, ranges of

July for a series of years, the mean temperature for July, 1886, and the departures from the normal:

Station.	County.	Normal temperature for July.	Number of years.	Mean temperature for July, 1886.	Departure.
Arkansas.		o		o	o
Lead Hill.....	Boone.....	79.8	4	81.7	+ 1.9
California.					
Sacramento.....	Sacramento	73.7	20	77.4	+ 3.7
Connecticut.					
Middletown *.....	Middlesex	70.7	28	70.0	- 0.7
Thompson *.....	Windham.....	70.4	30	69.7	- 0.7
Dakota.					
Webster.....	Day.....	74.2	4	76.8	+ 2.6
Illinois.					
Anna.....	Union.....	78.7	11	79.2	+ 0.5
Mattoon.....	Coles	77.9	6	80.0	+ 2.1
Peoria.....	Peoria.....	77.8	30	80.2	+ 2.4
Riley.....	McHenry.....	70.4	25	70.9	+ 0.5
Rockford.....	Winnebago.....	72.0	13	73.4	+ 1.4
Sycamore.....	De Kalb.....	70.7	5	71.1	+ 0.4
Indiana.					
Logansport.....	Cass.....	77.4	31	76.3	- 1.1
Lafayette.....	Tipppecanoe.....	72.8	7	74.0	+ 1.2
Maumy.....	Rush.....	72.5	7	74.0	+ 1.5
Spiceland.....	Henry.....	74.3	32	73.5	- 0.8
Vevay.....	Switzerland.....	78.7	21	75.4	- 3.3
Iowa.					
Cresco.....	Howard.....				
Monticello.....	Jones.....	72.8	33	75.0	+ 2.2
Kansas.					
Independence.....	Montgomery	78.5	15	81.2	+ 2.7
Lawrence.....	Douglas.....				
Wellington.....	Sumner.....	77.3	8	78.1	+ 0.8
Yates Centre.....	Woodson.....	77.2	6	79.0	+ 1.8
Maine.					
Belfast *.....	Waldo.....	66.5	27	64.8	- 1.7
Bridgeton *.....	Cumberland.....	68.9	12	66.5	- 2.4
Cornish.....	York.....	68.5	27	68.3	- 0.2
Gardiner.....	Kennebec.....	68.6	50	66.4	- 2.2
Orono *.....	Penobscot.....	67.5	18	67.1	- 0.4
Maryland.					
Fallston.....	Harford.....	75.0	12	71.5	- 3.5
Massachusetts.					
Ashurst *.....	Hampshire				
Cambridge *.....	Middlesex	71.8	64	70.4	- 1.4
Fitchburg *.....	Worcester.....	70.3	30	69.8	- 0.5
New Bedford *.....	Bristol.....	69.6	74	69.1	- 0.5
Springfield *.....	Hampden.....	73.4	19	73.0	- 0.4
Somerset.....	Bristol.....	74.3	16	74.7	+ 0.4
Taunton *.....	Bristol.....	74.9	16	71.1	- 3.8
Williamstown *.....	Berkshire.....	69.8	32	68.6	- 1.8
Nevada.					
Carson City.....	Ormsby	71.5	7	70.9	- 0.6
New Brunswick.					
Saint John *.....	Saint John	60.2	26	60.7	+ 0.5
New Hampshire.					
Concord *.....	Merrimac	70.7	18	67.6	- 3.1
Hanover *.....	Hanover	68.5	16	66.9	- 1.6
New Jersey.					
South Orange.....	Essex	73.3	16	70.5	- 2.8
New York.					
Factoryville.....	Tioga	67.9	5	67.8	- 0.1
North Volney.....	Oswego	69.5	19	67.3	- 2.2
Palermo.....	Owego	69.2	33	65.7	- 3.5
Plattsburg Barracks.....	Clinton	70.0	17	69.1	- 0.9
Ohio.					
Wauseon.....	Fulton.....	72.5	16	73.0	+ 0.5
Westerville.....	Franklin.....	72.0	12	70.6	- 1.4
Pennsylvania.					
Dyberry.....	Wayne.....	68.1	19	67.0	- 1.1
South Carolina.					
Stateburg.....	Sumter	79.3	6	77.5	- 1.8
Texas.					
New Ulm.....	Austin	82.7	15	83.4	+ 0.7
Vermont.					
Lunenburg *.....	Essex	69.9	38	66.3	- 3.6
Newport *.....	Orleans	69.0	12	67.8	- 1.2
Strafford *.....	Orange	69.0	12	70.1	+ 1.1
Virginia.					
Bird's Nest.....	Northampton	79.2	18	79.8	+ 0.6
Dale Enterprise.....	Rockingham	75.1	6	77.1	+ 2.0
Variety Mills.....	Nelson	75.6	9	72.9	- 2.7
Wytheville.....	Wythe	72.2	22	70.6	- 1.6
West Virginia.					
Helvetia.....	Randolph	69.7	10	68.2	- 1.5

* From the "Bulletin of the New England Meteorological Society."

The following notes, in connection with this subject, are furnished by voluntary observers:

Indiana.—Logansport, Cass county: the highest temperature that has occurred in any July during the past thirty-one years was 106°.0, in 1874; the lowest, 46°.0, in 1863.

Vevay, Switzerland county: the highest temperature that has occurred in any July during the past twenty-one years was 102°.0, in 1881; lowest, 54°.0, in 1876 and 1884.

Iowa.—Monticello, Jones county: the highest July temperature that has occurred during the past thirty-three years was 101°.0, in 1870; the lowest, 43°.0, in 1863. The highest July mean temperature during the same time was 80°.2, in 1868; the lowest, 63°.2, in 1863.

Kansas.—Wellington, Sumner county: the highest July temperature dur-

ing the last eight years occurred in 1879, 1884, and 1886, 105°.0; the lowest during the same period occurred in 1882, 51°.0.

Maine.—Cornish, York county: the highest July mean temperature during the past twenty-seven years was 72°.8, in 1868; the lowest mean for the same time was 64°.4, in 1879.

Maryland.—Fallston, Harford county: during the past twelve years the warmest July occurred in 1872, mean temperature, 78°.7; the coldest was in 1884, mean, 71°.0.

Massachusetts.—Worcester, Worcester county: during the past fifty years the extremes of July have been 95°.0, in 1849, and 48°.0, in 1845, 1849, and 1851. The mean temperature on the coldest day was 54°.7, in 1845 and 1884; the warmest July day was in 1849, the mean temperature for that day being 89°.2. The highest July mean temperature during the past fifty years was 77°.8, in 1854; the lowest mean, 64°.7, in 1884.

New Jersey.—South Orange, Essex county: the mean temperature for the month, 70°.5, is below that of any July during the past sixteen years.

New York.—Palermo, Oswego county: the highest July mean temperature of the past thirty-three years occurred in 1868, 79°.1; the lowest mean, 62°.1, in 1860; the highest temperature in that time, 99°.0, occurred July 14, 1868.

North Volney, Oswego county: the warmest July during the last nineteen years was that of 1868, mean temperature, 76°.2; the coldest, 1884, mean, 64°.9.

Ohio.—Westerville, Franklin county: the extremes of temperature in July during the past twelve years are 101°.0, in 1881, and 44°.0, in 1885.

Texas.—New Ulm, Austin county: during the last fifteen years the highest July mean occurred in 1879, 85°.0; lowest in 1880, 80°.6. The extremes of temperature during that time are 104°.5, in 1886, and 64°.0, in 1877.

Virginia.—Dale Enterprise, Rockingham county: the warmest July during the past six years occurred in 1885, monthly mean, 79°.9; the coldest in 1888, monthly mean, 68°.3.

Variety Mills, Nelson county: the highest July mean temperature during the past nine years was 79°.5, in 1878; lowest, 72°.5, in 1882.

In the following table are given the mean temperatures for the several geographical districts, with the normals and departures, as deduced from Signal Service observations:

Districts.	Average temperatures for July.		Comparison of July, 1886, with the average for several years.
	For seven years.	For 1886.	
New England	o	o	o
Middle Atlantic States.....	69.5	68.5	1.0
South Atlantic States.....	76.0	73.9	2.1
Florida Peninsula.....	80.7	78.3	3.4
Eastern Gulf States.....	82.7	81.2	1.5
Western Gulf States.....	81.0	78.4	2.0
Rio Grande Valley.....	82.3	80.9	1.4
Tennessee	85.4	82.2	3.2
Ohio Valley.....	79.0	76.4	2.6
Lower Lake region.....	77.1	74.9	2.2
Upper Lake region.....	71.2	69.0	2.2
Extreme Northwest.....	66.5	71.1	4.6
Upper Mississippi Valley.....	75.6	76.8	1.2
Missouri Valley.....	74.1	76.5	2.4
Northern slope.....	66.8	72.6	5.8
Middle slope.....	74.7	76.9	2.2
Southern slope.....	78.4	80.5	2.1
Southern plateau.....	80.0	81.2	1.2
Middle plateau.....	73.6	74.9	1.3
Northern plateau.....	70.3	75.8	5.5
North Pacific coast region.....	64.6	66.1	1.5
Middle Pacific coast region.....	71.0	71.3	0.3
South Pacific coast region.....	76.0	75.9	0.1

FROSTS.

Frosts occurred in the various states and territories during the month on the following dates:

Maine.—Cornish, 12th.

Nevada.—Carson City, 1st, 2d, 5th.

New Hampshire.—Mount Washington, 13th, 25th.

New York.—Humphrey, 11th; Factoryville, 12th.

Oregon.—Fort Klamath, 1st, 6th, 7th, 8th, 26th.

Pennsylvania.—Dyberry, 12th, 24th; Wellsborough, 12th, 23d.

Vermont.—Strafford, 12th.

Portland, Maine: on the 12th a damaging frost occurred in the valley of the Saco River.

Marquette, Michigan: on the 17th a heavy frost occurred in the vicinity of this place, doing serious injury to the potato crop.